

FIG. 1

FIG. 2

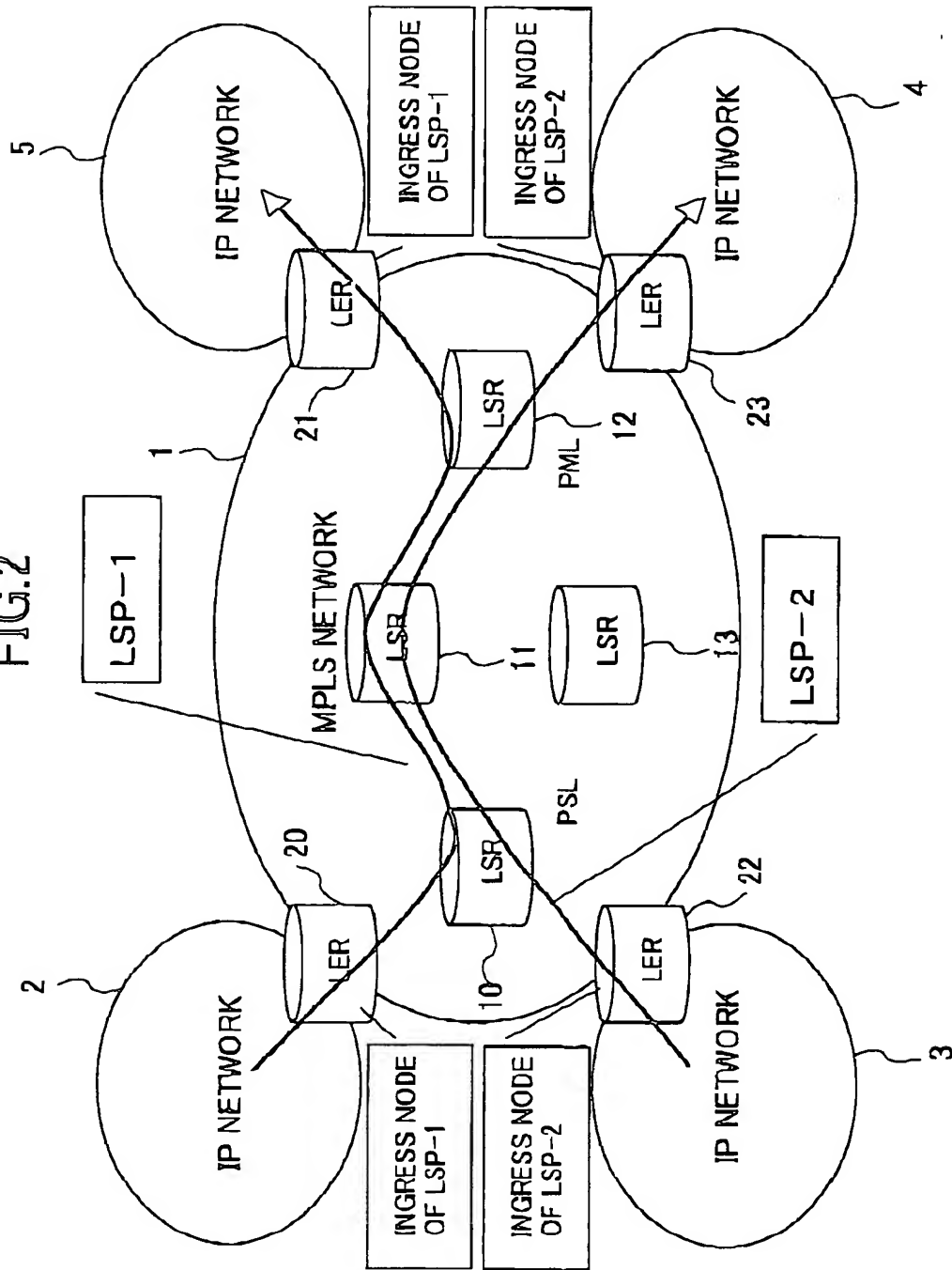


FIG.3

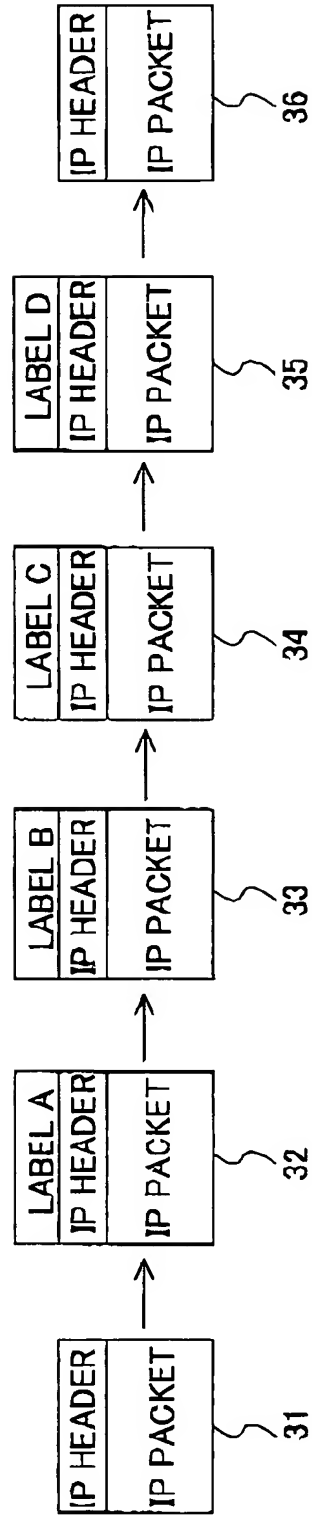


FIG.4

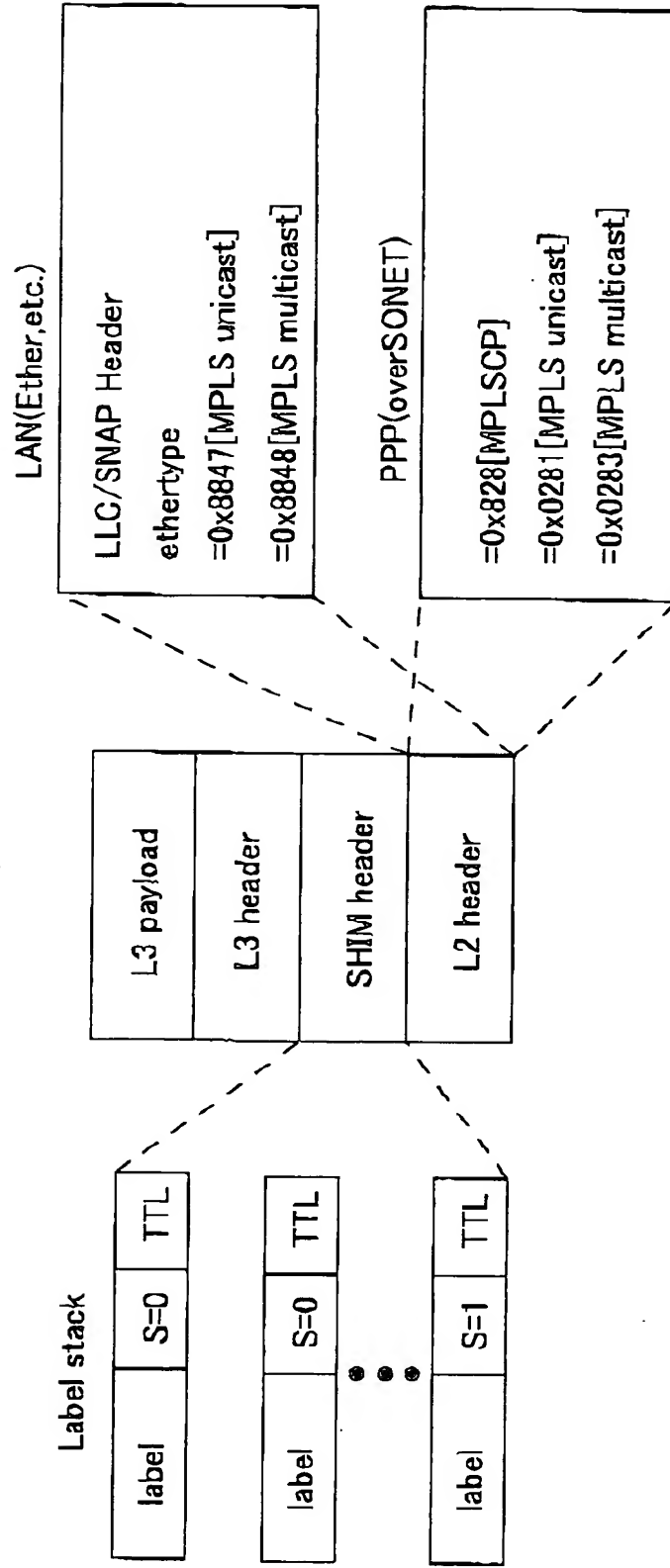
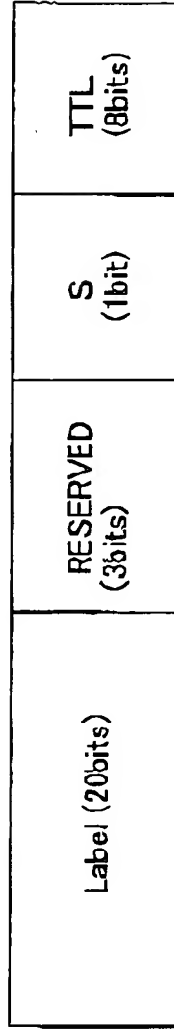


FIG.5



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FIG.6

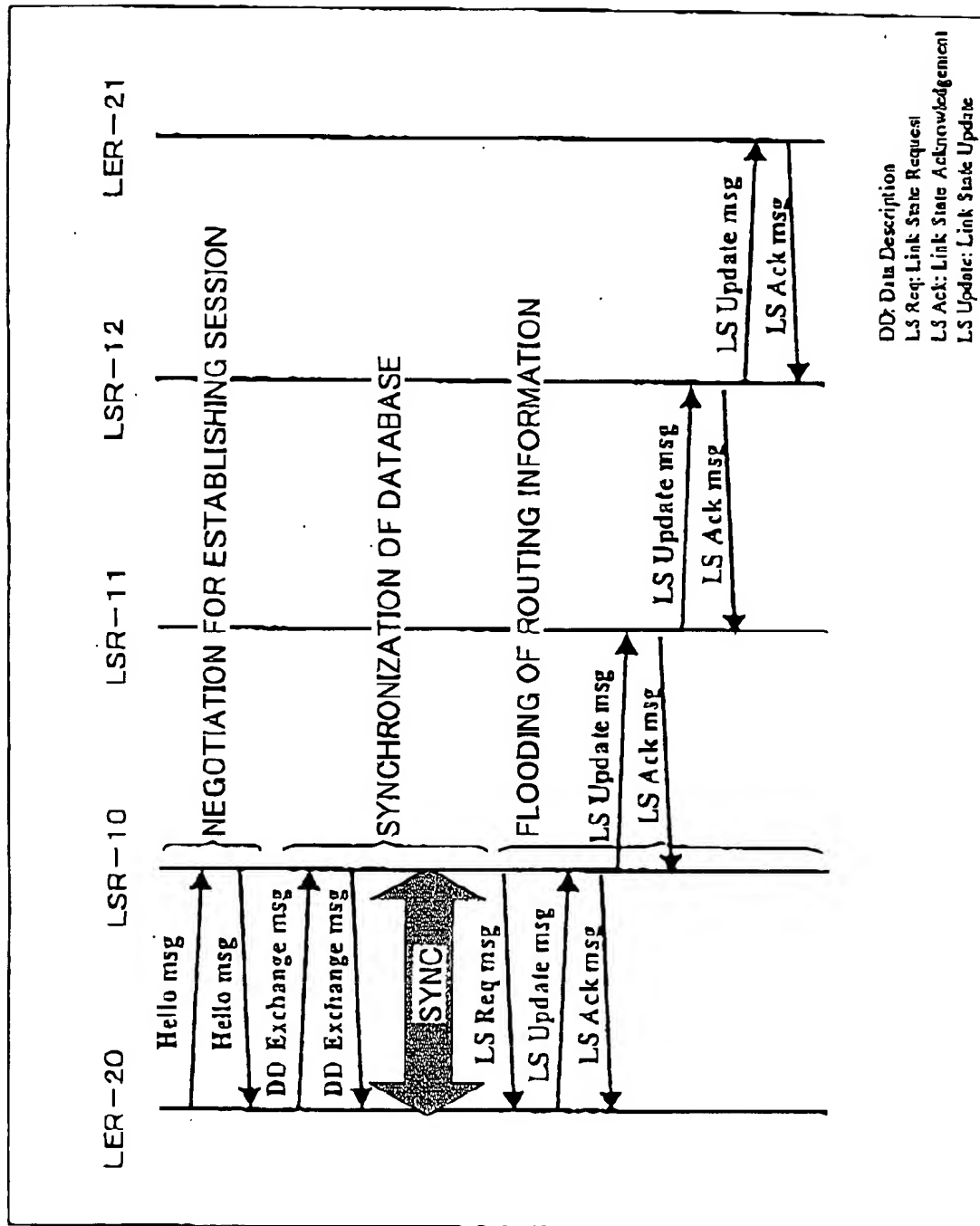


FIG.7

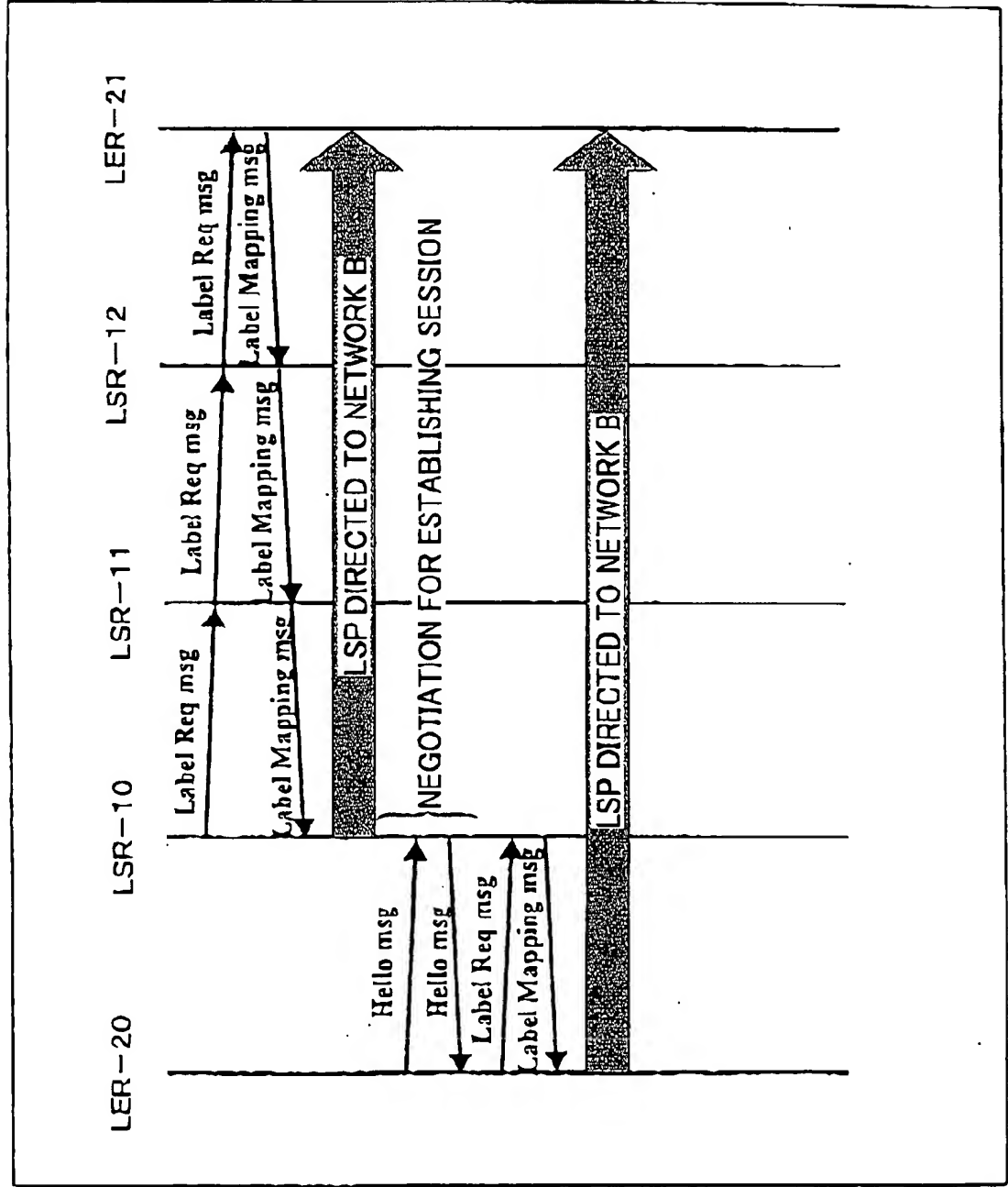


FIG.8

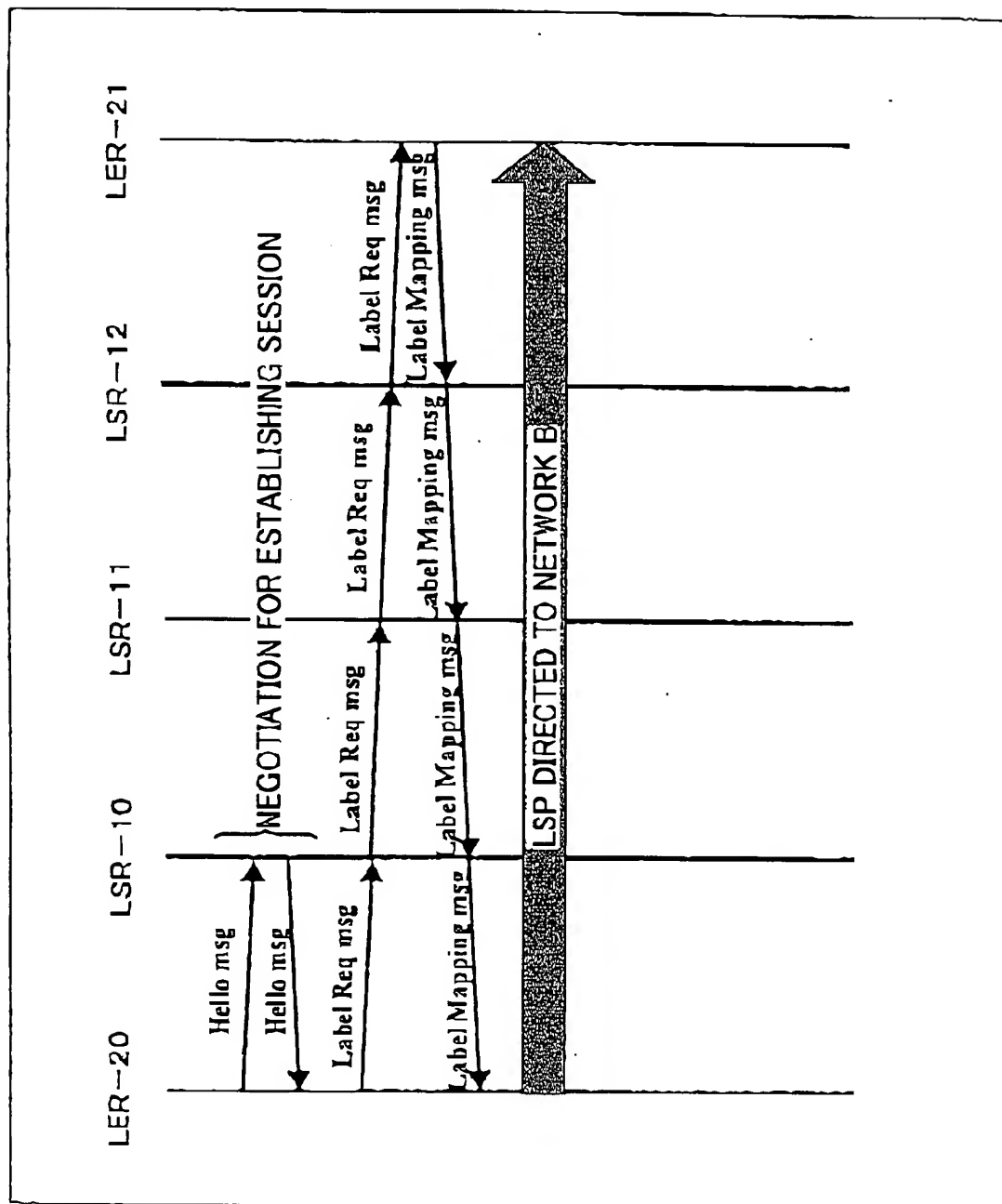




FIG.9

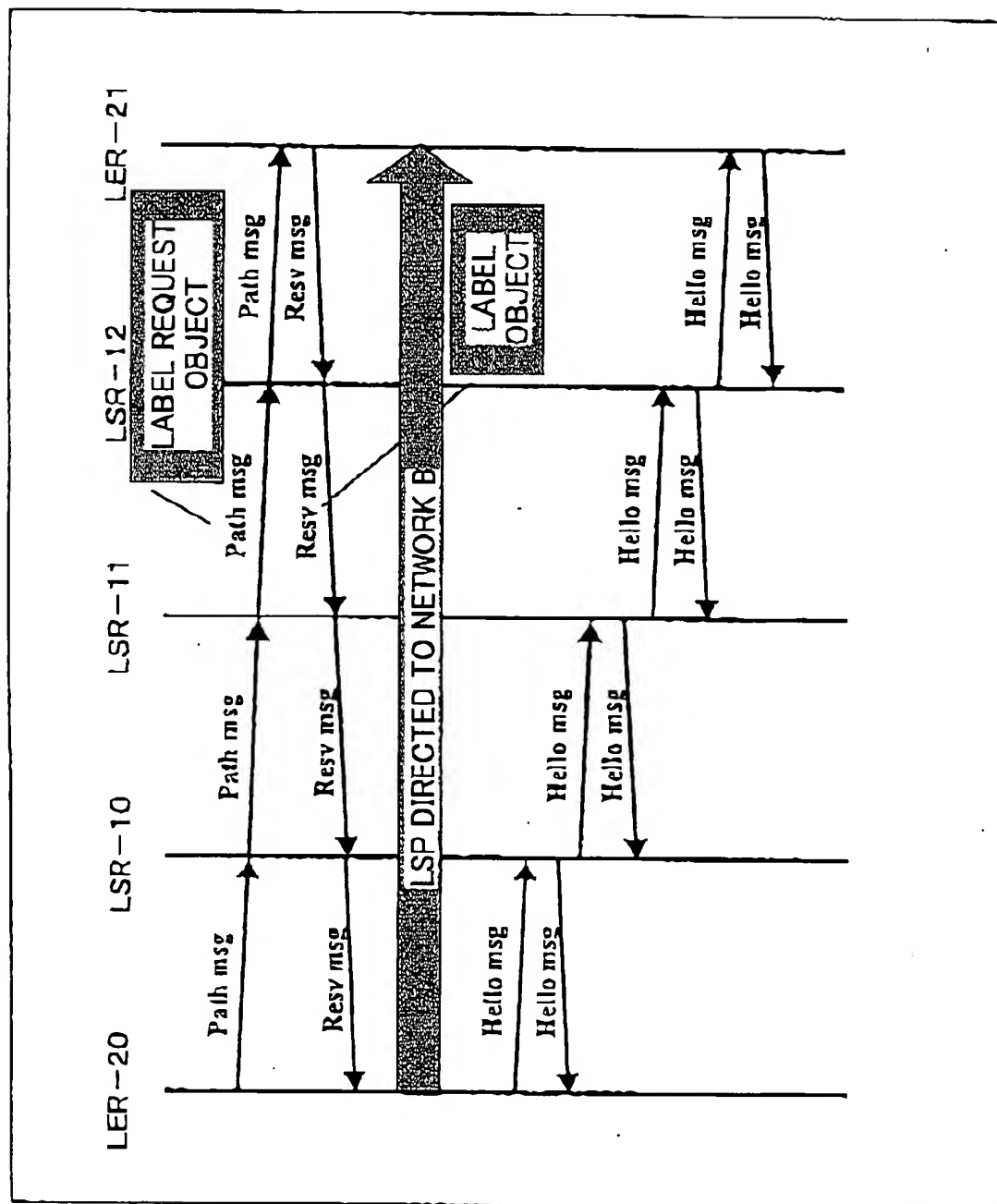


FIG.10A

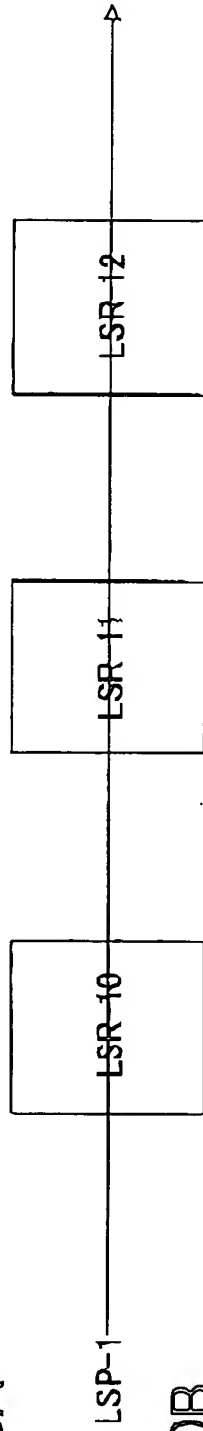


FIG.10B

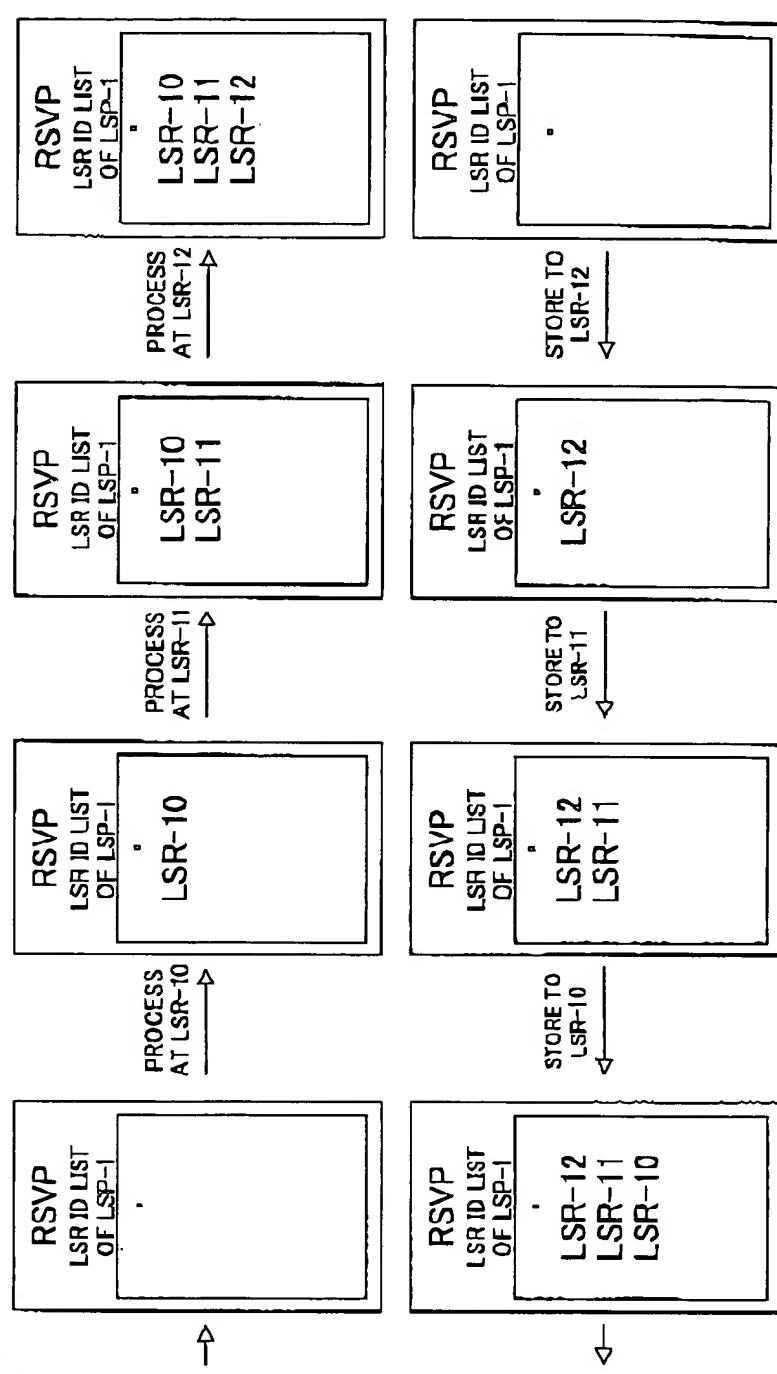
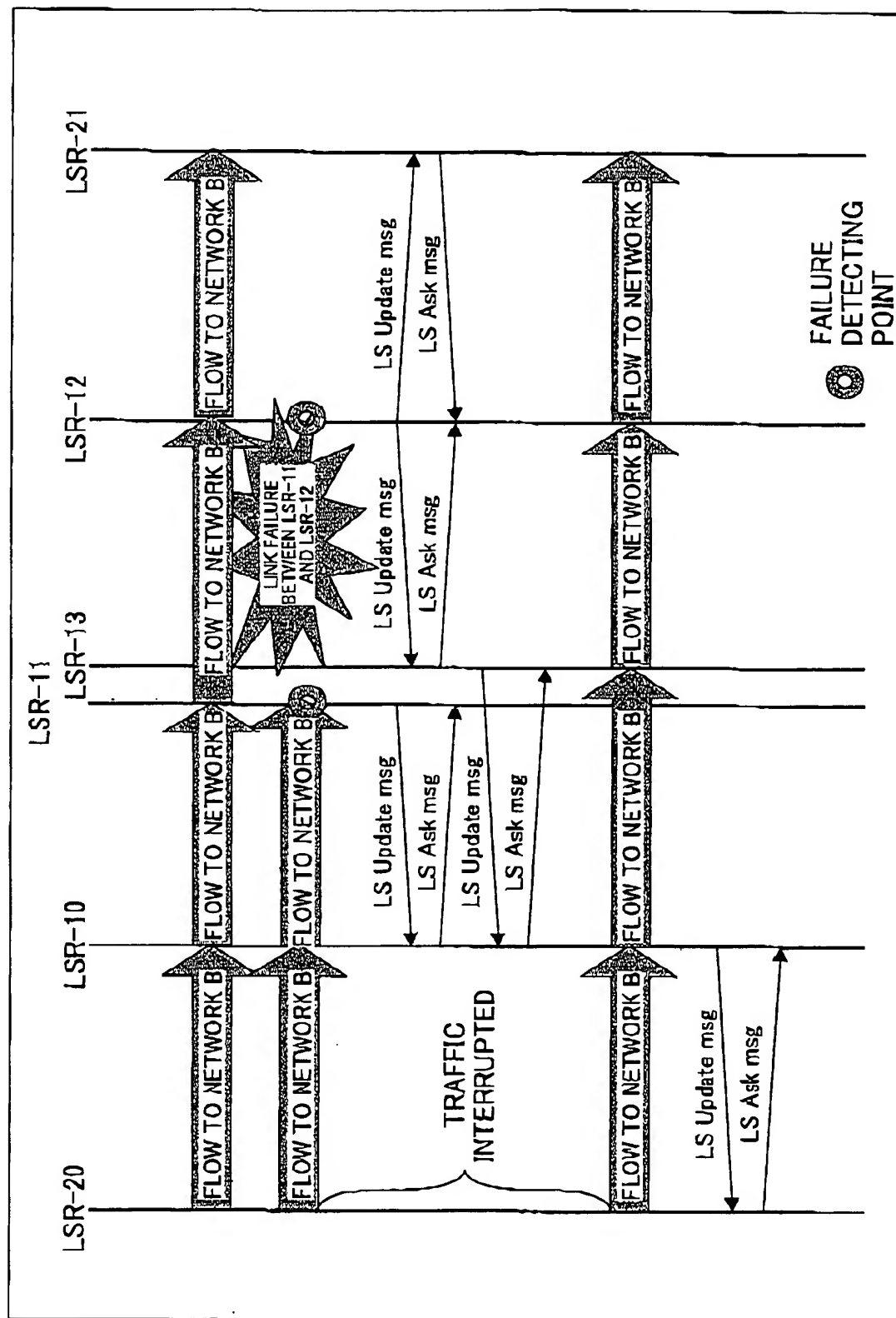


FIG.10C

FIG. 11



The diagram illustrates the failure of LSR-11 and the subsequent recovery process. The sequence of events is as follows:

- Initial state: LSR-20, LSR-10, LSR-11, LSR-13, LSR-12, and LSR-21 are all operational.
- Failure of LSR-11: LSR-11 fails, indicated by a starburst labeled "NODE FAILURE OF LSR-11".
- Traffic interruption: The failure of LSR-11 causes "TRAFFIC INTERRUPTED" between LSR-20 and LSR-10.
- Detection of failure: LSR-10 and LSR-12 detect the failure of LSR-11, indicated by a circle labeled "FAILURE DETECTING POINT".
- Recovery process: LSR-10 and LSR-12 send LS Update and LS Ask messages to LSR-20 and LSR-21. LSR-20 and LSR-21 then send LS Update and LS Ask messages to LSR-13 and LSR-12, respectively, to propagate the update.

FIG.13

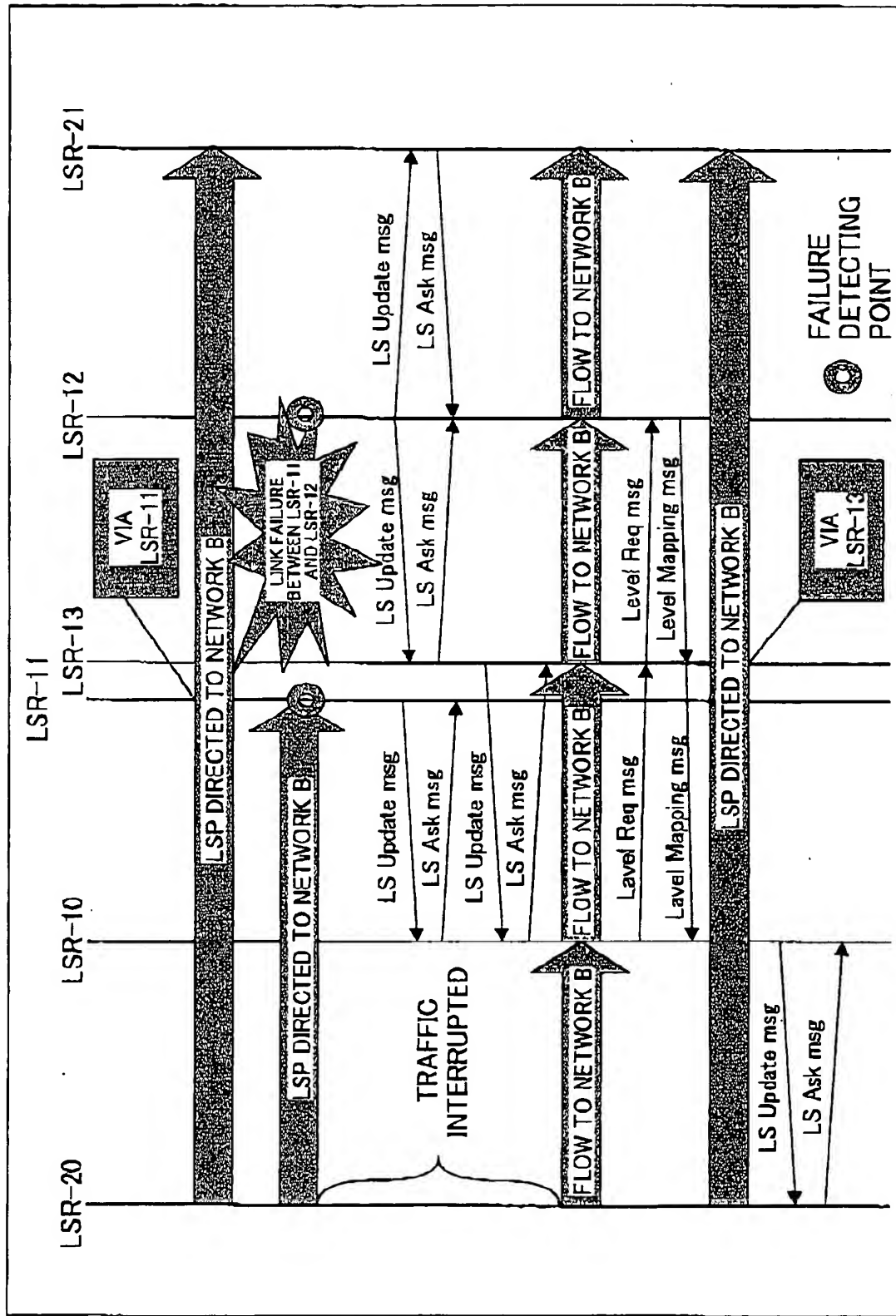


FIG. 14

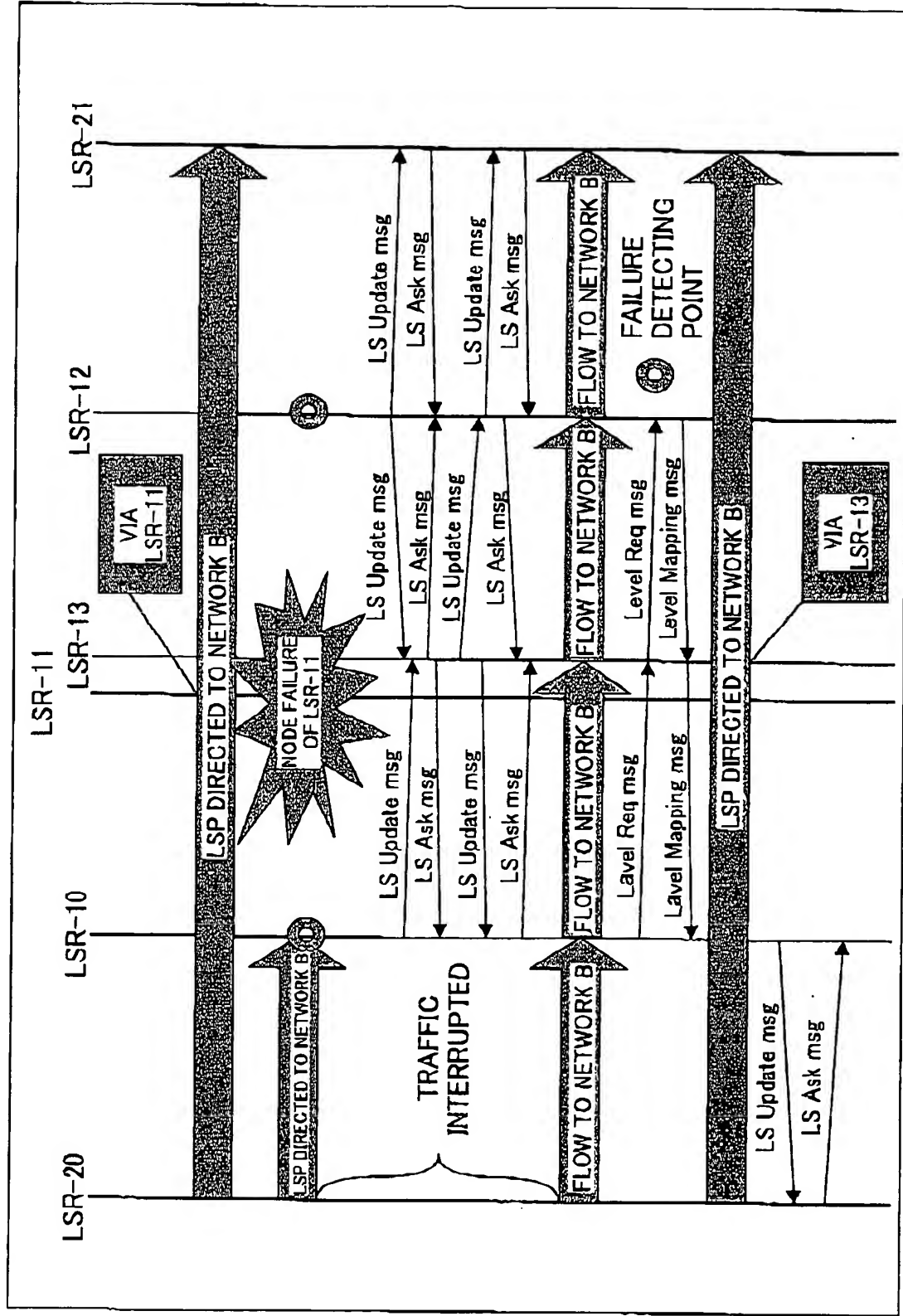


FIG.15

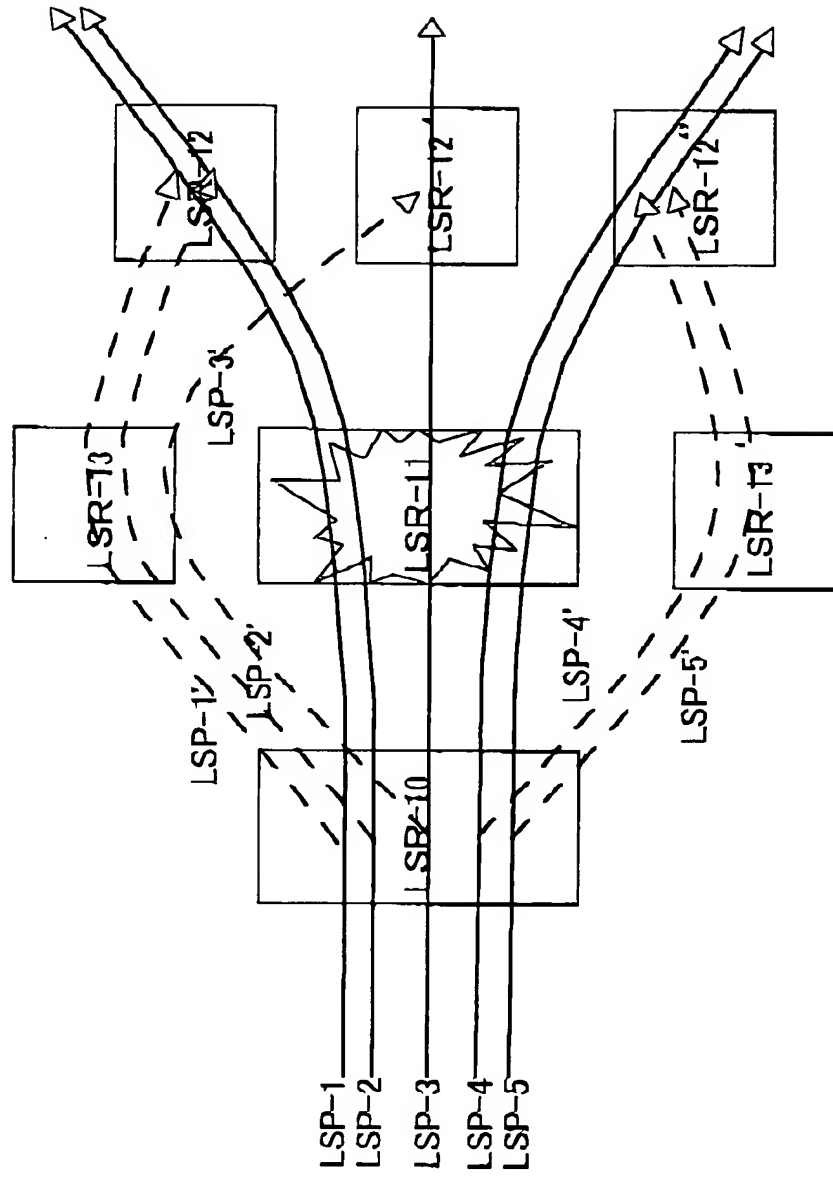
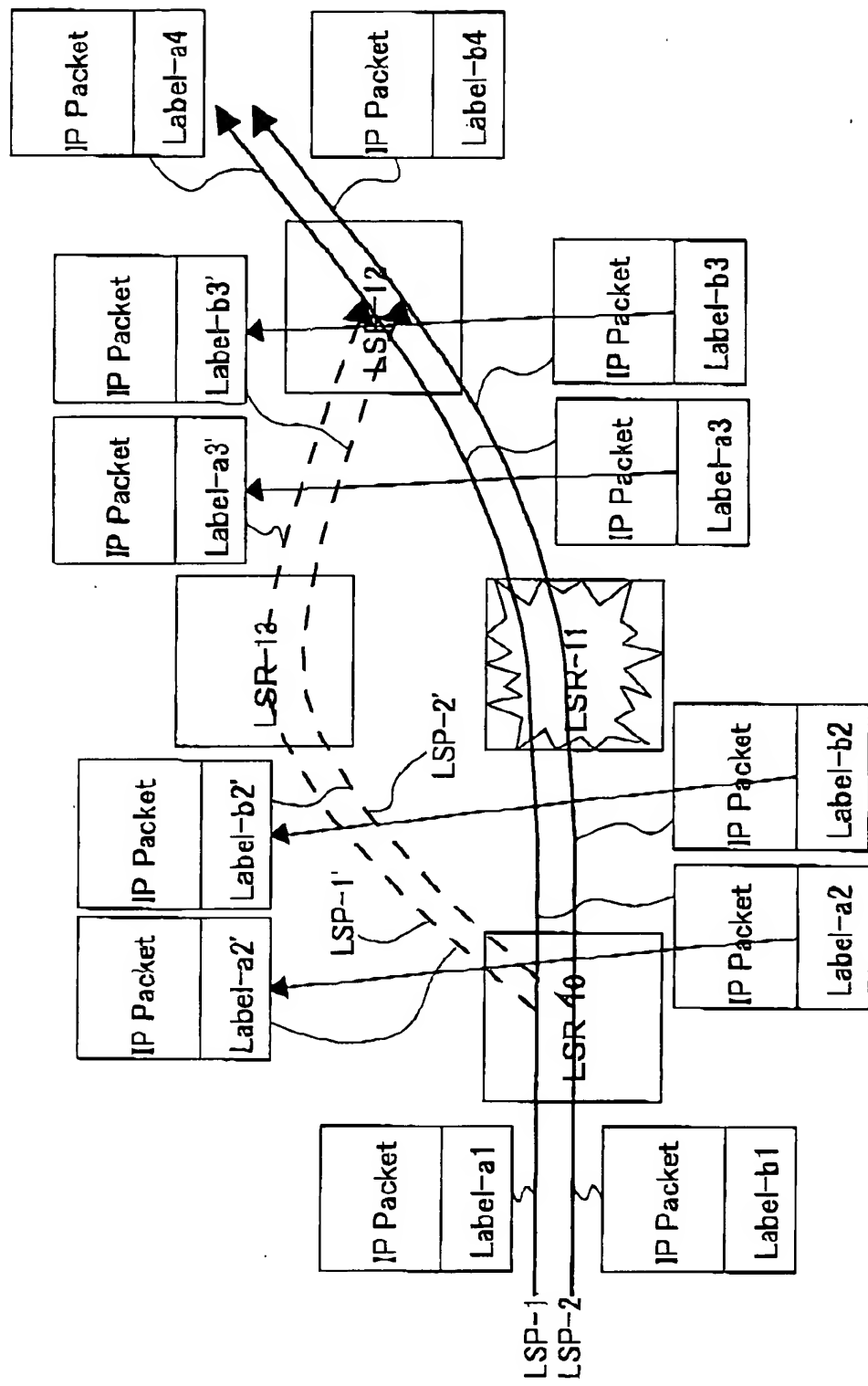


FIG. 16





The diagram illustrates the recovery process for a link failure between LSR-11 and LSR-12. The sequence of events is as follows:

- Initial State:** LSR-10, LSR-11, LSR-12, and LSR-21 are shown as vertical timelines.
- Link Failure:** A starburst icon labeled "LINK FAILURE BETWEEN LSR-11 AND LSR-12" with a "FAILURE DETECTING POINT" symbol indicates the failure.
- Traffic Interruption:** A bracket labeled "TRAFFIC INTERRUPTED" spans the period from the link failure to the start of the recovery path setup.
- Recovery Path Setup:**
  - LSR-10 sends a "Level Req msg" to LSR-11.
  - LSR-11 sends a "Level Mapping msg" to LSR-10.
  - LSR-11 sends a "Level Req msg" to LSR-12.
  - LSR-12 sends a "Level Mapping msg" to LSR-11.
  - LSR-11 sends a "Level Req msg" to LSR-21.
  - LSR-21 sends a "Level Mapping msg" to LSR-11.
- LSP Directed to Network B:**
  - LSR-10 sends an "LSP DIRECTED TO NETWORK B" message.
  - LSR-11 sends an "LSP DIRECTED TO NETWORK B" message.
  - LSR-12 sends an "LSP DIRECTED TO NETWORK B" message.
  - LSR-21 sends an "LSP DIRECTED TO NETWORK B" message.
- LS Update/Ask Messages:**
  - LSR-10 sends an "LS Update msg" to LSR-11.
  - LSR-11 sends an "LS Ask msg" to LSR-10.
  - LSR-11 sends an "LS Update msg" to LSR-12.
  - LSR-12 sends an "LS Ask msg" to LSR-11.
  - LSR-12 sends an "LS Update msg" to LSR-21.
  - LSR-21 sends an "LS Ask msg" to LSR-12.
- Recovery Path Setup:**
  - LSR-11 sends a "VIA LSR-11" message to LSR-10.
  - LSR-12 sends a "VIA LSR-13" message to LSR-11.

# FIG.18

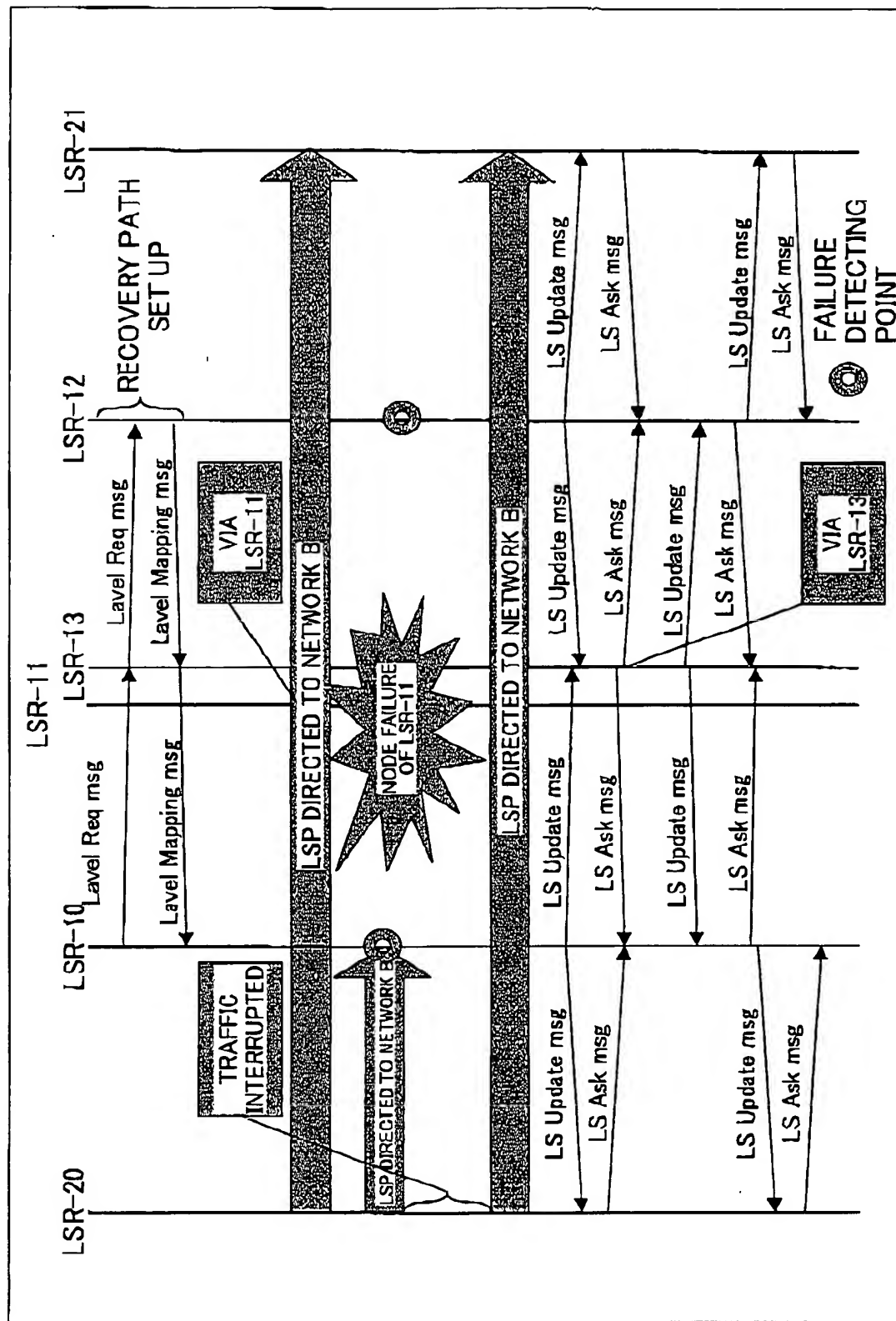


FIG.19

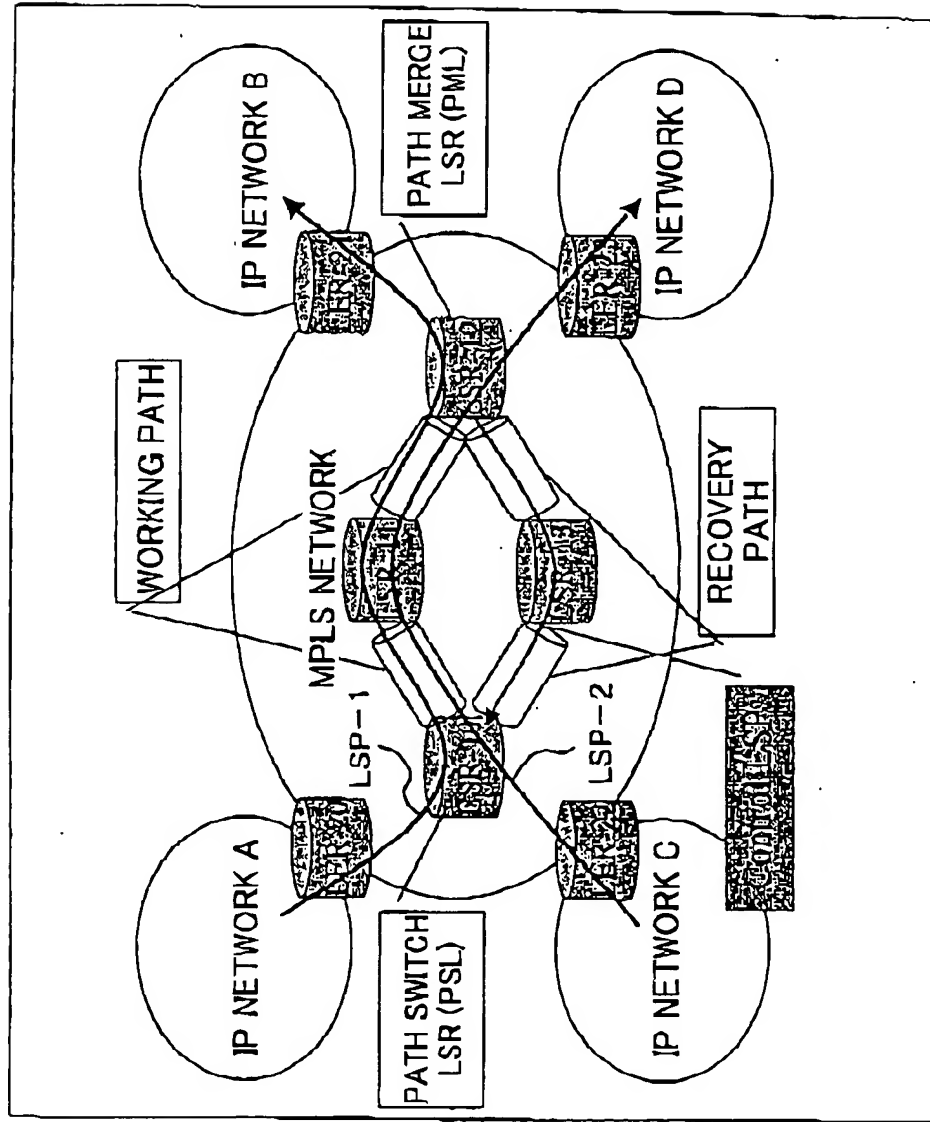


FIG.20A

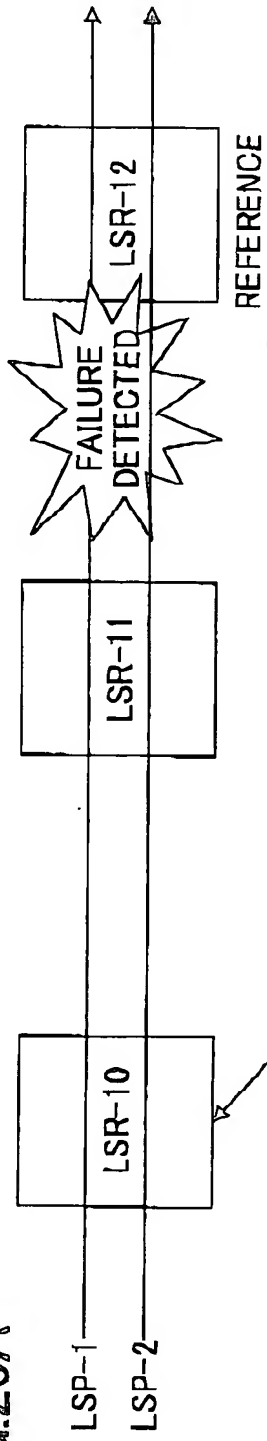


FIG.20B

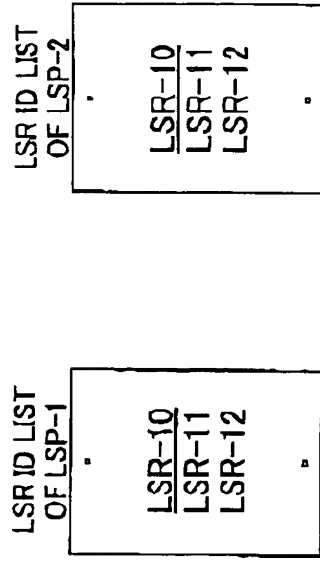


FIG.20C

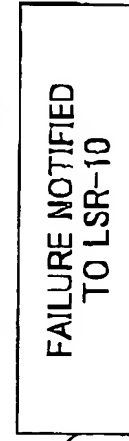


FIG.21A

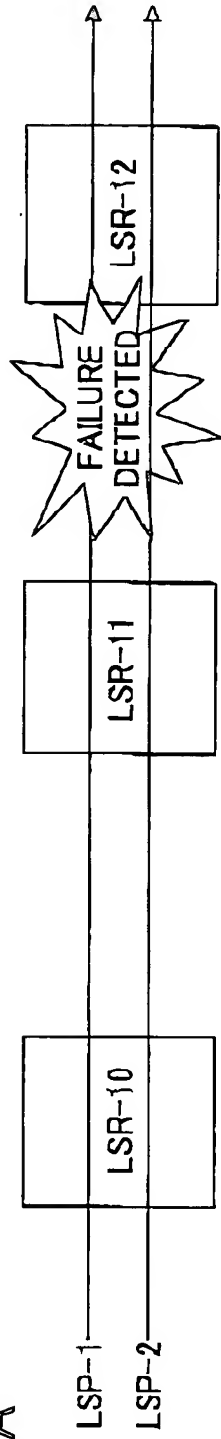


FIG.21B

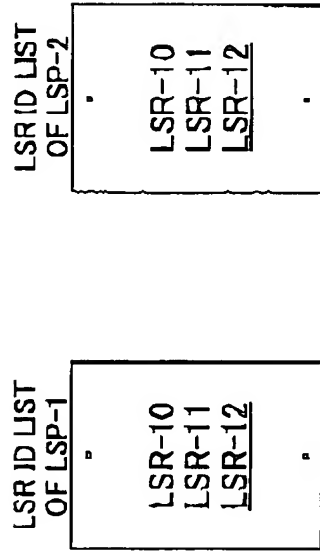


FIG.21C

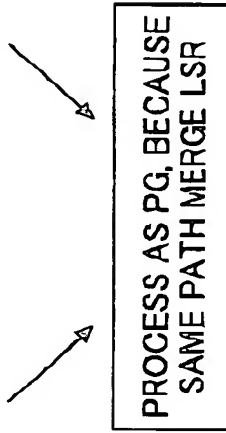


FIG.22A

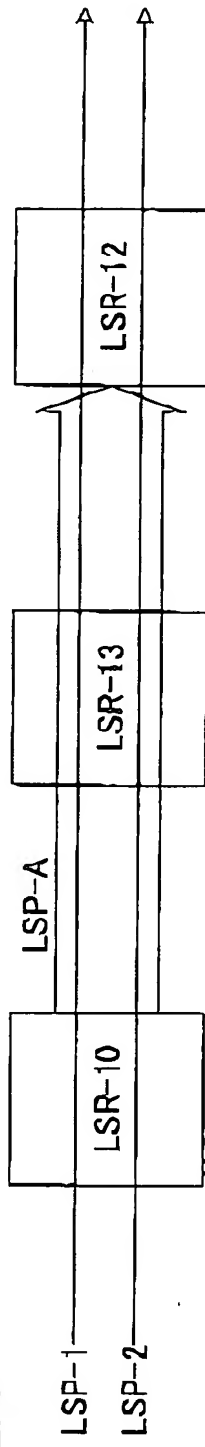


FIG.22B

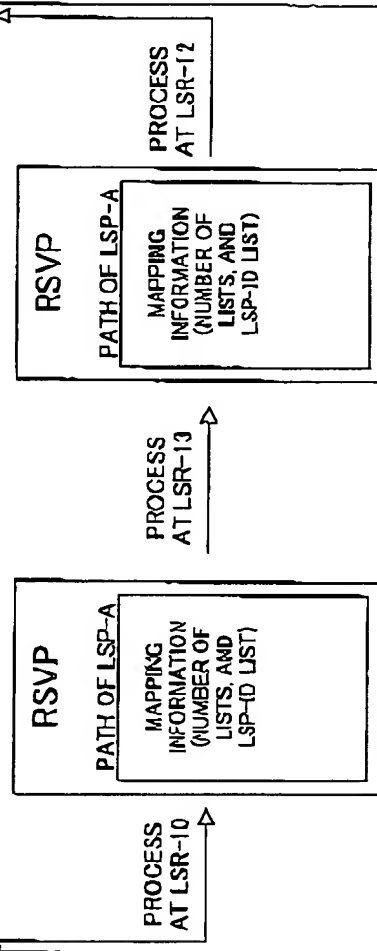


FIG.22C

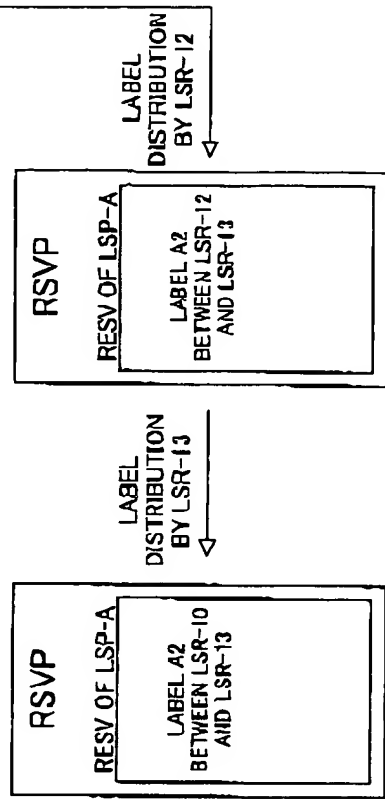


FIG.23A

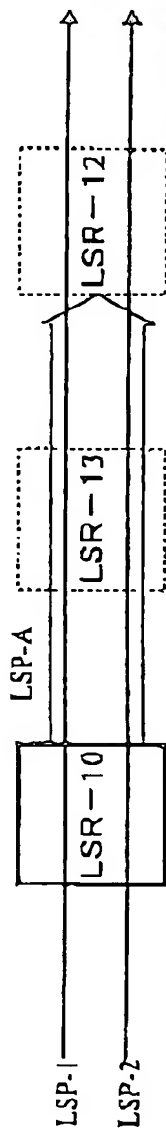


FIG.23B

	IN-PORT	IN-LABEL	Action	OUT-PORT	OUT-LABEL
LSP-1	2	a1	swap	4	a2
LSP-2	3	b1	swap	4	b2



FIG.23C

	IN-PORT	IN-LABEL	Action	OUT-PORT	OUT-LABEL
LSP-1	2	a1	push	5	A1
LSP-2	3	b1	push	5	A1

FIG.24A

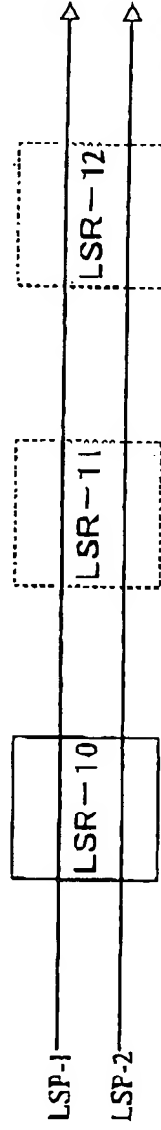


FIG.24B

	IN-PORT	IN-LABEL	Action	OUT-PORT	OUT-LABEL
LSP-1	2	a1	push	5	A1
LSP-2	3	b1	push	5	A1



FIG.24C

	IN-PORT	IN-LABEL	Action	OUT-PORT	OUT-LABEL
LSP-1	2	a1	swap	4	a2
LSP-2	3	b1	swap	4	b2



FIG.25A

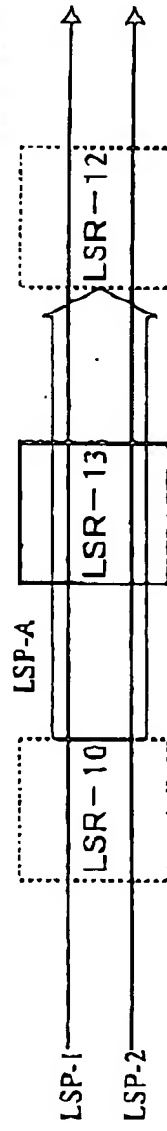


FIG.25B

IN-PORT	IN-LABEL	Action	OUT-PORT	OUT-LABEL
2	A1	swap	1	A2

LSP-A

FIG.26A

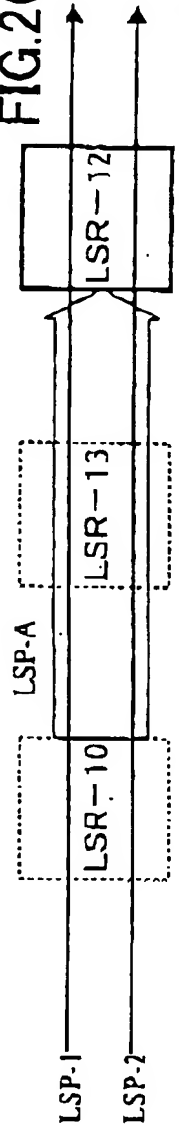


FIG.26B

	IN-PORT	IN-LABEL	Action	OUT-PORT	OUT-LABEL
LSP-1	6	a3	swap	4	a4
LSP-2	6	b3	swap	4	b4



FIG.26C

	IN-PORT	IN-LABEL	Action	OUT-PORT	OUT-LABEL
LSP-A	3	A2	pop	-	-
LSP-1	3	a2'	swap	4	a4
LSP-1	6	a3	swap	4	a4
LSP-2	3	b2'	swap	4	b4
LSP-2	6	b3	swap	4	b4

FIG.27

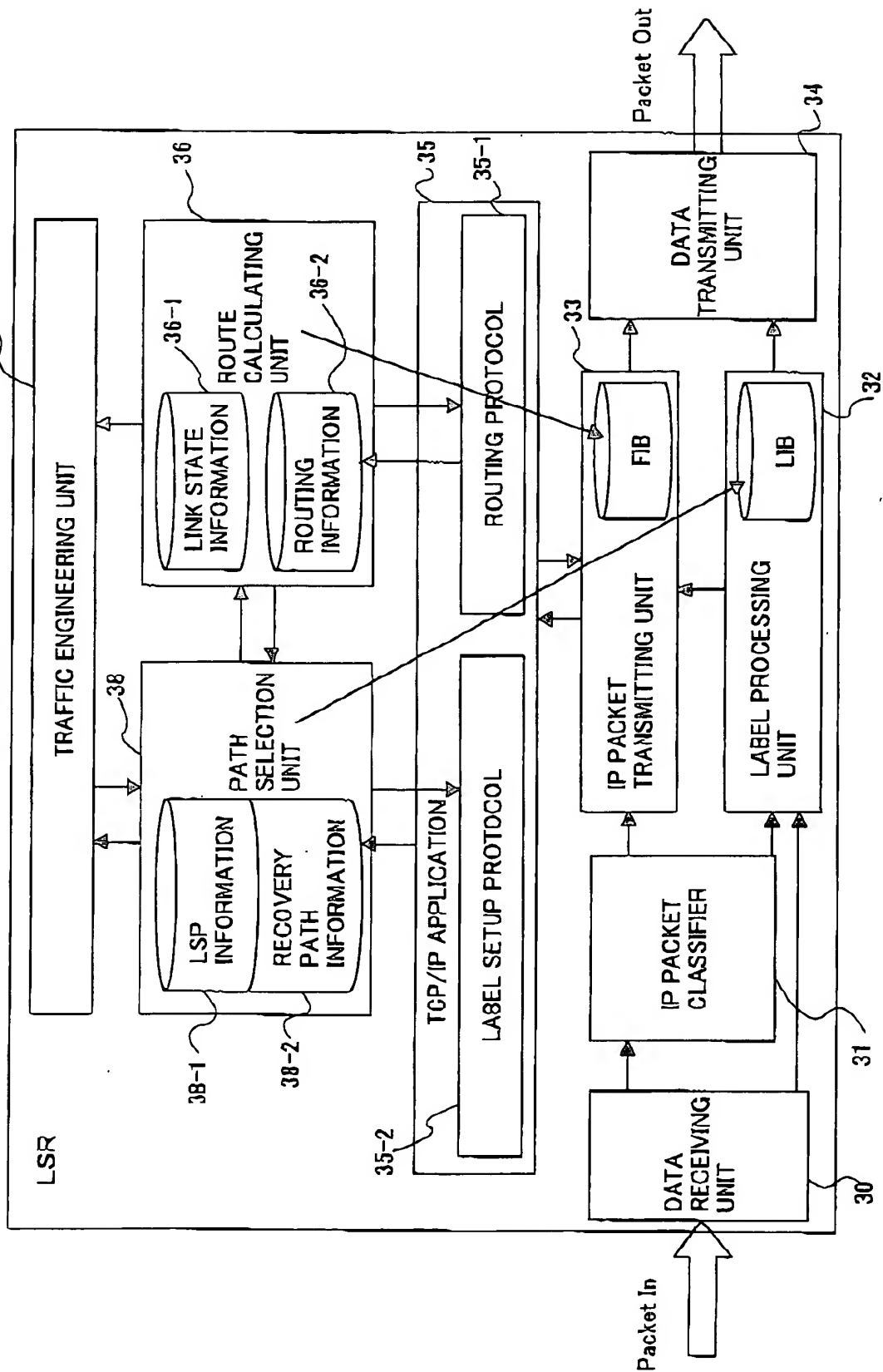


FIG.28

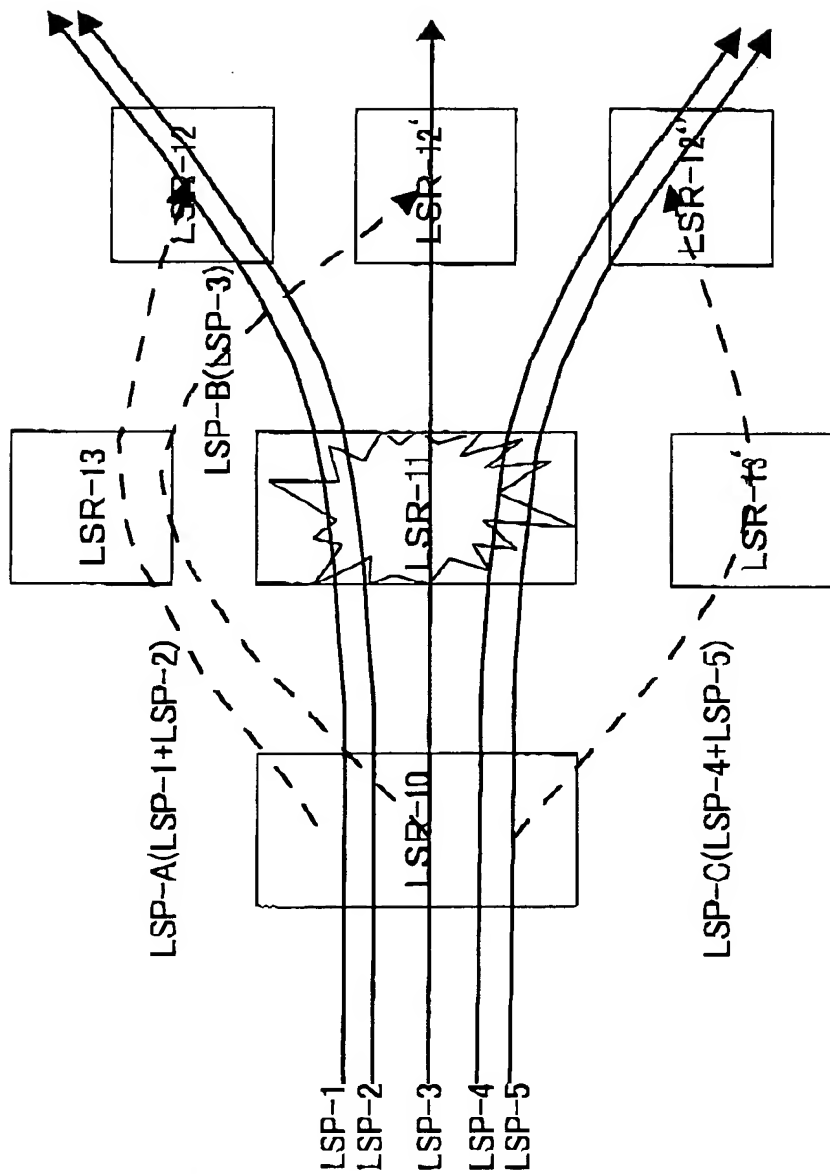


FIG. 29

